

Approach: One to one

Year: 4 & 8

Focus: Electricity

Resources: Torch bulb, battery (cell) in holder, red and green wires with alligator clips

Questions / instructions:

In this activity you're going to try to make a torch bulb shine.

Show students the equipment.



1. Here is the equipment for you to use. Try to connect it so the bulb shines.

If you can't manage to make the bulb shine I'll help you.

Allow time for the student to attempt the task independently.

Only use the following prompts if the student needs help.

PROMPTS: Use each end of the battery holder.

Put the alligator clips on these bits of the battery holder.  
(Point to the appropriate bits.)

Touch the bulb with both wires.

working independently,  
student got bulb to shine

If necessary assist the student to make bulb shine.

2. Look at your equipment and try to explain to me what made the bulb work?

PROMPT: What makes the light shine?

complete path/circuit for electricity to flow  
the battery pumps electricity/power/energy  
around the circuit

the battery has energy/power in it

the electricity goes through a thin wire  
(filament) and makes it hot and it glows

3. Look at the red wire and the green wire.

Is the same amount of electricity flowing through both wires, or does one wire have more electricity flowing through it than the other wire?

same

4. Why do you say that?

good explanation for "same"  
(same amount has to go out as comes in,  
current electrons flow all around circuit)

incorrect explanation for "different"  
(electricity used up in bulb)

5. Why do batteries usually go flat after they have been used for a while?

not marked

% responses 2003 ('99)		year 4	year 8
3.	Is the same amount of electricity flowing through both wires, or does one wire have more electricity flowing through it than the other wire?	40 (62)	49 (57)
4.	Why do you say that?		
	good explanation for "same" (same amount has to go out as comes in, current electrons flow all around circuit)	2 (8)	7 (7)
	incorrect explanation for "different" (electricity used up in bulb)	[7 (7)]	[12 (1)]
5.	Why do batteries usually go flat after they have been used for a while?		
	not marked	•	•
<b>Total score:</b>		5-8	2 (4)
		3-4	8 (19)
		2	29 (20)
		2	22 (29)
		28 (29)	28 (29)
		1	44 (32)
		27 (34)	27 (34)
		0	24 (16)
		8 (11)	8 (11)



% responses 2003 ('99)		year 4	year 8
1.	Here is the equipment for you to use. Try to connect it so the bulb shines.		
	If you can't manage to make the bulb shine I'll help you.		
	working independently, student got bulb to shine	16 (31)	49 (43)
2.	Look at your equipment and try to explain to me what made the bulb work?		
	complete path/circuit for electricity to flow	8 (9)	31 (18)
	the battery pumps electricity/power/energy around the circuit	9 (6)	19 (11)
	the battery has energy/power in it	41 (38)	48 (40)
	the electricity goes through a thin wire (filament) and makes it hot and it glows	2 (3)	4 (4)

Commentary:

Whereas in 1999, there was very little difference in performance between year 4 and year 8 students, in 2003 year 4 students performed noticeably worse than in 1999 and year 8 students performed a little better than in 1999.